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IMPROVEMENTS TO NAVIGATION IN THE GULF OF ST. LAWRENCE.

BY

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Within the past three or four years there has been considerable discussion in the public press respecting deficiencies in aids to navigation in the Gulf of St. Lawrence, prompted by the large number of casualties on this great Canadian route and the consequent high rate of marine insurance. While investigations into past wrecks have demonstrated that the blame lay rather with the culpable ignorance and negligence of sailors and the defective system of pilotage than with aids to navigation, the agitation has had the good effect of inducing Parliament to vote liberal subsidies for the extension and improvement of the lighthouse and fog alarm service.

The lights in the St. Lawrence are not, it is true, strictly first-class, having been built under exceptional conditions. When the Dominion Government was organized in 1867 there were very few aids to navigation of any kind, and the Minister of Marine of that day was confronted with the problem of efficiently lighting one of the longest coast-lines in the world out of a very slender purse. He wisely decided to put up a large number of cheap wooden lighthouses, provided with economical yet fairly effective apparatus, rather than a small number of expensive aids. The result was at that time eminently satisfactory; but with increased speed of steamships, and with the strenuous competition which compels navigation even through the thickest fog, the time has arrived when more quickly-flashing lights and the most powerful fog-signals must replace the aids that gave such good service in the past. It is consequently contemplated to do a great deal of work in improving aids to navigation on this route during the coming season. A first-rate quick-flashing light and powerful fog siren are being built on the north-east end of the island of Belle Isle to mark the gateway to the more northerly entrance to the Gulf. A modern steam lightship is being built to mark the dreaded east end of the island of Anticosti. Cape Rosier light is being increased in power and made occulting. At

Fame Point, the landfall steered for in crossing from Anticosti, a fog alarm was installed last year. This is one of the Hamilton-Foster sirens, which give out different signals to the several cardinal points, and is established on trial, as the principle is yet considered to be in the nature of an experiment. At Matane a first-class siren will be established this year; and at Father Point, which is important as marking the limits of the pilotage ground, a first-class siren has just been installed. These are only some of the changes already made and in contemplation, and are merely quoted as instances of the class of work in which the Government is now engaged. When they are completed, it will be possible, with ordinary good seamanship, to navigate the St. Lawrence safely under any conditions of weather.

The fog alarms now in course of installation are the most powerful of their kind in the world. They are either sirens, or modifications of sirens, of the largest size, operated by compressed air, and will undoubtedly give satisfaction if mariners can be taught that sound signals are always liable to aberration, caused through want of homogeneity in the atmosphere. Lack of knowledge of this physical law is probably the cause of more wrecks than any other single factor in recent marine disasters.

The recent invention of a lamp to burn vaporized petroleum under an incandescent mantle promises to furnish an extremely powerful light at a minimum of care and expense. It is a moderate estimate that coal oil so treated will produce ten times the light that can be got out of it when burnt under ordinary conditions. This petroleum vapour-burner is being adopted for the latest Canadian lighthouse installations.

Last year the system of telegraph lines and cables built and maintained by the Government as aids to navigation was completed by their extension to Belle Isle, the island itself being connected with Labrador both by cable and etheric telegraphy. The whole of the Canadian coast of the Gulf, including the island of Anticosti, is, therefore, in direct telegraphic communication with shipping centres. These lines are operated at a heavy loss expressly for the benefit of shipping. The general adoption of an etheric telegraph system is now under consideration by the Canadian Government.

A comprehensive system of tidal stations has also been established throughout the Gulf and on the Atlantic coast. This enables reliable tide-tables to be issued for the harbours, with which the tidal streams of the St. Lawrence are brought into relation. The currents in the Gulf have been investigated in a general way, and the work is being continued. The results already obtained prove that there are no currents in the open Gulf much exceeding one knot—a rate practically inappreciable by modern steamers. Much misapprehension formerly existed on this point, which should be removed by the extensive publication of the results. As these have been summarized in all the leading maritime periodicals, ignorance of them by sailors is inexcusable. It is unnecessary to emphasize the importance to the navigator of reliable information of this character.

FOREST RESERVE IN THE SOUTHERN APPALACHIANS.

No more interesting Government report has been issued in many years than that here noticed bearing the title:

> Message from the President of the United States, transmitting Report of the Secretary of Agriculture, in relation to the Forests, Rivers and Mountains of the Southern Appalachian Region.

The President's Message is short but emphatic, and the Secretary's Report, going somewhat into detail, is followed by appendices, with full treatment of special themes.

A reserve in this region was first urged upon Congress in 1900, by the Appalachian Mountain Club in New England and by the Appalachian National Park Association of the Southern States, and the sum of $5,000 was at once appropriated for investigation. The needed field studies were made in 1900 and 1901, and were far more extended than could be provided for by the appropriation, owing to the vigorous co-operation of the United States Geological Survey. The work covered parts of six States.

The Southern Blue Ridge and the Unaka Mountains are described—the highest region in North America that is covered by hardwood forest. The river bottoms and water-powers of the Piedmont Plateau depend on the regularity of the streams rising in these mountains, and such regularity hinges, in turn, upon the preservation of the forests. No glacier has invaded the region, the rainfall is abundant, and the development of the forests has been unimpeded for geological periods, until now 137 species of trees are found there, and a still greater variety of shrubs.

The variation of altitude is great enough to affect the distribution in a marked way: On Mount Mitchell, oak, hickory, maple, and